



FCC 47 CFR PART 15 SUBPART C
CERTIFICATION TEST REPORT
FOR

Wireless Charger

MODEL NUMBER: Lovely 1.0

REPORT NUMBER: 11406735A

FCC ID: 2AKKMLOVD1

ISSUE DATE: January 12, 2017

Prepared for
Lovely Inc.
2443 Fillmore St #380-7362
San Francisco, CA 94115
USA

Prepared by
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NVLAP Lab code: 100414-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	January 12, 2017	Initial Issue	V Sabalvaro

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Lovely Inc.
2443 Fillmore St #380-7362
San Francisco, CA 94115
USA

EUT DESCRIPTION: Docking station for Lovely Smart Sex Toy

MODEL: Lovely 1.0

SERIAL NUMBER: non-serialized

DATE TESTED: October 11 – December 8, 2016

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART C	Pass

UL LLC tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL LLC based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For
UL LLC By:



Bart Mucha
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Tested By:



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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2013, FCC CFR 47 Part 2, FCC CFR 47 Part 15.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 333 Pfingsten Road, Northbrook, IL 60062 USA.

UL NBK is accredited by NVLAP, Laboratory Code 100414-0. The full scope of accreditation can be viewed at <http://ts.nist.gov/>

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Sample Calculations

Radiated Field Strength and Conducted Emissions data contained within this report is calculated on the following basis:

Field Strength (dBuV/m) = Meter Reading (dBuV) + AF (dB/m) - Gain (dB) + Cable Loss (dB)

Conducted Voltage (dBuV) = Meter Reading (dBuV) + Cable Loss (dB) + LISN IL (dB)

Conducted Current (dBuA) = Meter Reading (dBuV) + Cable Loss (dB) - Transducer Factor (dBohms)

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test	Range	Equipment	Uncertainty k=2
Conducted Emissions	9k-150kHz	LISN	3.84dB
Conducted Emissions	150k-30MHz	LISN	3.65dB
Radiated Emissions	9k-30MHz	H-Field Loop	3.15dB
Radiated Emissions	30-200MHz	Bicon 10m Horz	4.48dB
Radiated Emissions	30-200MHz	Bicon 10m Vert	4.49dB
Radiated Emissions	200-1000MHz	LogP 10m Horz	3.79dB
Radiated Emissions	200-1000MHz	LogP 10m Vert	3.84dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a Wireless Qi Charger which is only intended to charge the Lovely device

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak field strength output as follows:

Frequency Range (MHz)	Mode	Output Field Strength* dBuV/m
0.110 - 0.205	Charging	85.45

* - Field Strength measured at 3-meter distance.

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The device utilizes an coil antenna

5.4. SOFTWARE AND FIRMWARE

None.

5.5. WORST-CASE CONFIGURATION AND MODE

EUT was tested with Lovely Device seated in the charging dock providing maximum load.

5.6. MODIFICATIONS

No modifications were made during testing.

5.7. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Lovely Device	LOVELY FUN SP Z O O	Lovely	none	none
Representative Power Supply	Samsung	ETA-P10X	-	-

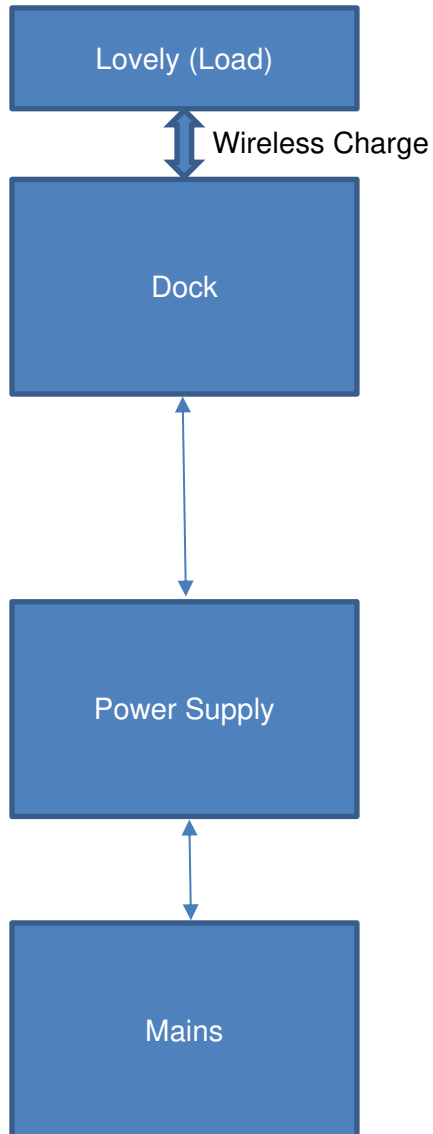
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC Input	1	-	Micro USB	<3m	none

TEST SETUP

The EUT was configured with the Lovely device docked while charging on the Cradle.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment List					
Description	Manufacturer	Model	Eqp. No.	Cal Date	Cal Due
Radiated Software	UL	UL EMC	Ver 9.5, July 22, 2014		
Conducted Software	UL	UL EMC	Ver 9.5, May 17 2012		
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC4328	20151118	20161130
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC4328	20161202	20171231
Bicon Antenna	Chase	VBA6106A	EMC4078	20151228	20161231
Log-P Antenna	Chase	UPA6109	EMC4313	20160122	20170131
Loop Antenna	EMCO	6502/1	EMC4026	20160722	20170731
EMI Test Receiver	Rohde & Schwarz	ESR	EMC4377	20160426	20170426
Transient Limiter	Electro-Metrics	EM7600-2	EMC4224	N/A	N/A
HighPass Filter	Solar Electronics	2803-150	885551	N/A	N/A
Attenuator	HP	8494B	2831A00838	N/A	N/A
LISN - L1	Solar	8602-50-TS-50-N	EMC4052	20160216	20170228
LISN - L2	Solar	8602-50-TS-50-N	EMC4064	20160216	20170228

7. RADIATED EMISSION TEST RESULTS

7.1. LIMITS AND PROCEDURE

LIMITS

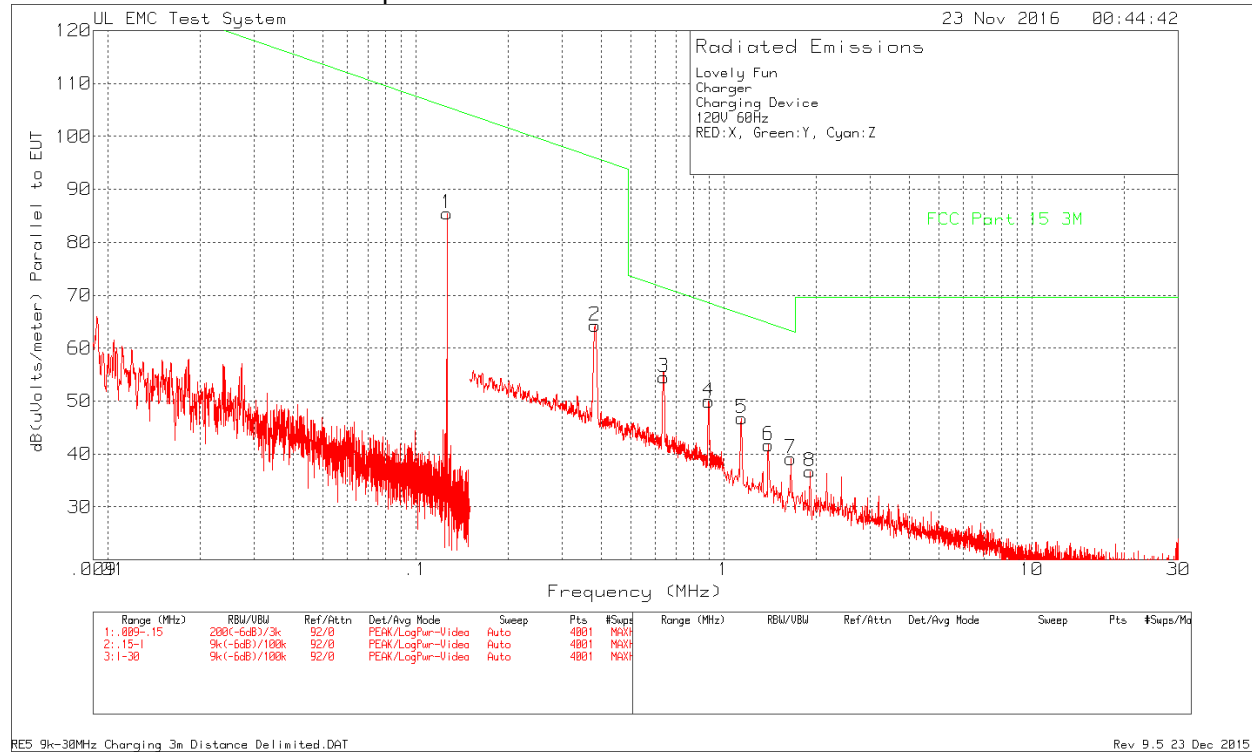
FCC §15.209 (a)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (m)	Limit dBuV/m
0.009–0.490	2400/F(kHz)	300	128.5 – 93.8 @3m
0.490–1.705	24000/F(kHz)	30	73.8 – 63.0 @ 3m
1.705–30.0	30	30	69.5 – 69.5 @ 3m
30–88	100	3	40.0 @ 3m
88 to 216	150	3	43.5 @ 3m
216 to 960	200	3	46.0 @ 3m
Above 960 MHz	500	3	54.0 @ 3m
Note: The lower limit shall apply at the transition frequency.			

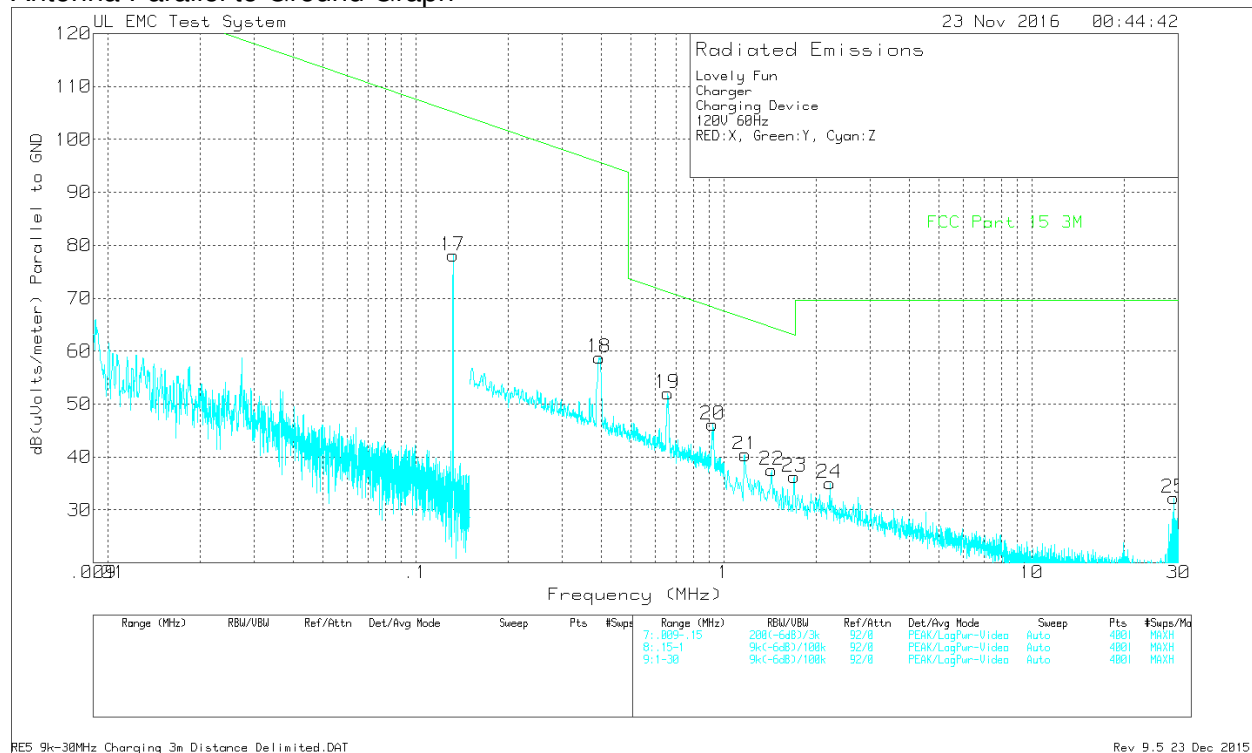
RESULTS

7.2. TX FUNDAMENTAL AND SPURIOUS EMISSIONS 0.009kHz TO 30 MHz Charging Mode

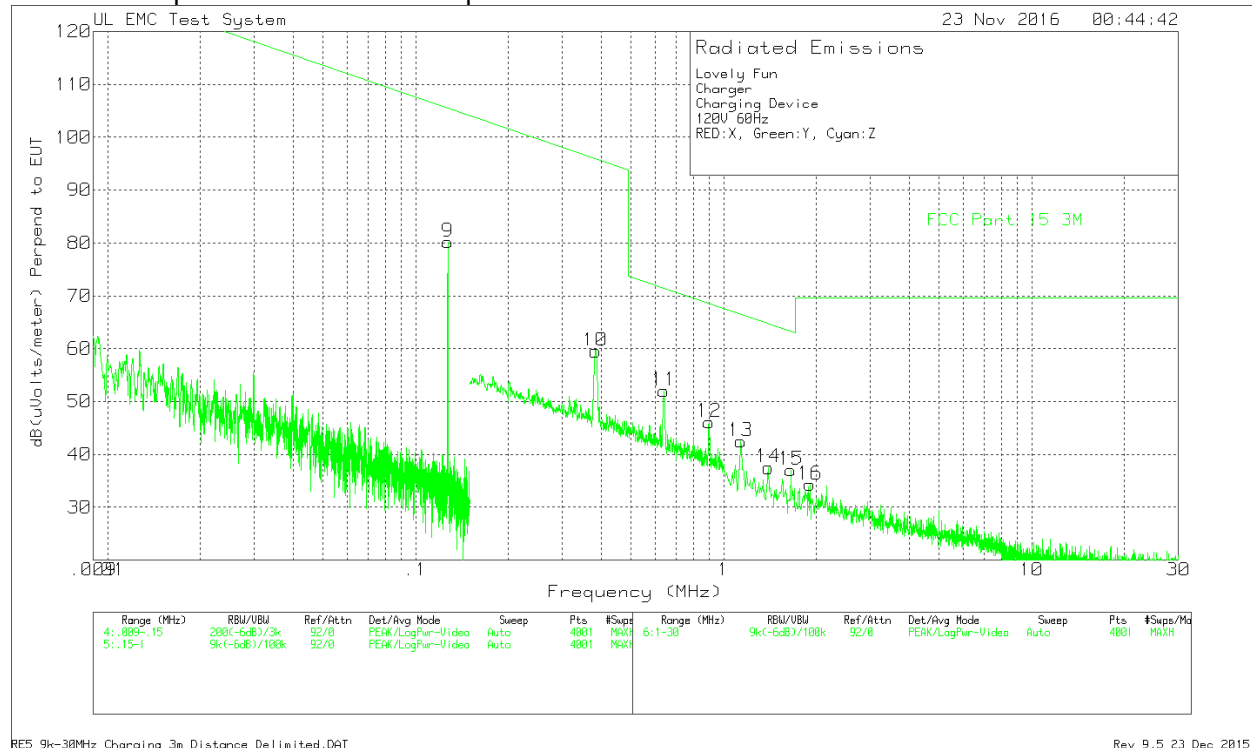
Antenna Parallel to EUT Graph



Antenna Parallel to Ground Graph



Antenna Perpendicular to EUT Graph



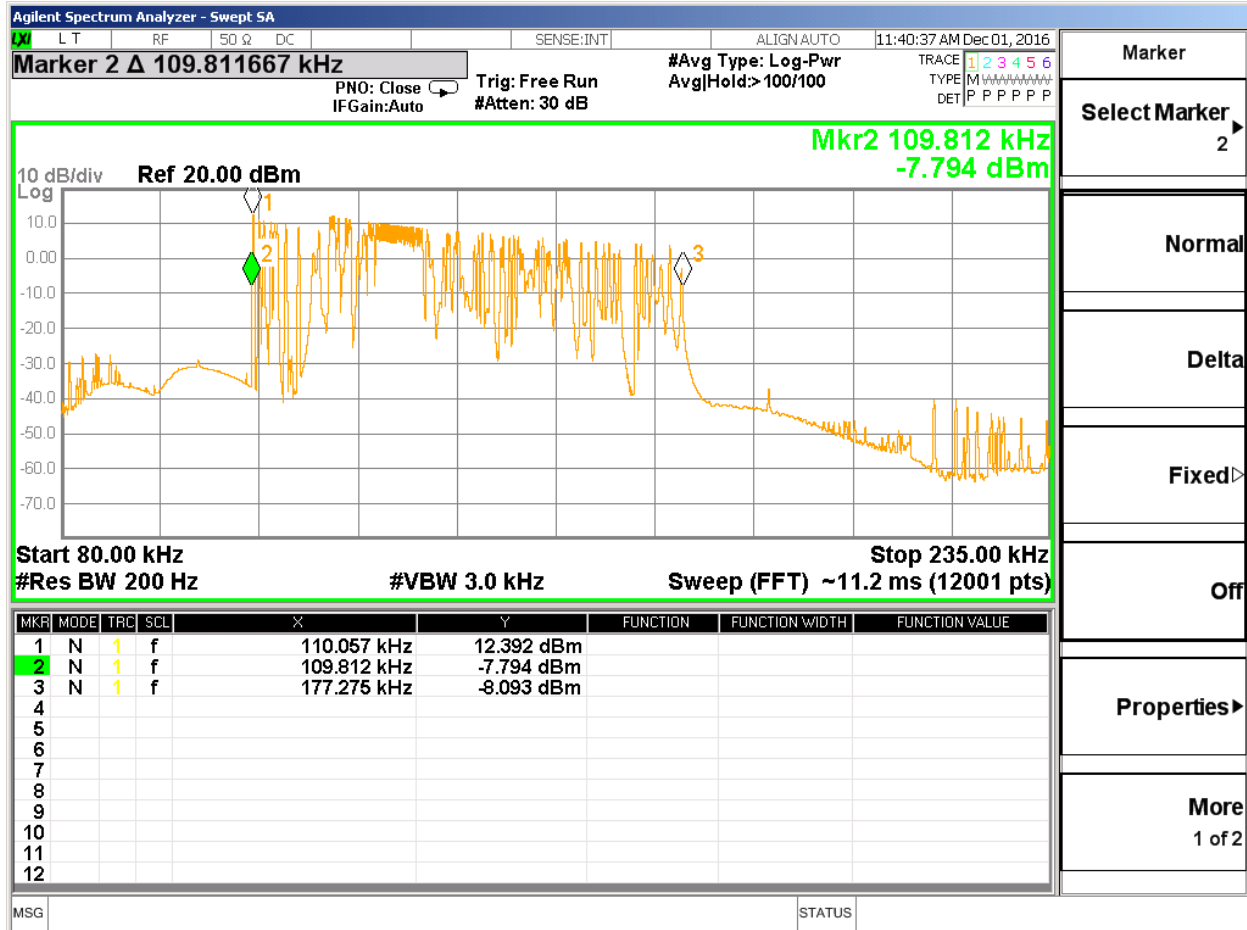
Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 10 m open area test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the tests made in an open field based on KDB 937606.

Data

Lovely Fun										
Charger										
Charging Device										
120V 60Hz										
RED:X, Green:Y, Cyan:Z										
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dBm	Path dBm	Corrected Reading dB(uVolts/meter)	Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Polarity
1	0.126565	74.05	Pk	11.4	0	85.45	105.55	-20.1	0-360	X
2	0.38238	53	Pk	11.3	0	64.3	95.95	-31.65	0-360	X
3	0.64033	43.12	Pk	11.4	0	54.52	71.48	-16.96	0-360	X
4	0.89401	38.5	Pk	11.4	0.1	50	68.58	-18.58	0-360	X
5	1.145	35.29	Pk	11.4	0.1	46.79	66.43	-19.64	0-360	X
6	1.39875	30.21	Pk	11.4	0.1	41.71	64.69	-22.98	0-360	X
7	1.6525	27.54	Pk	11.5	0.1	39.14	63.24	-24.1	0-360	X
8	1.90625	25.13	Pk	11.5	0.1	36.73	69.54	-32.81	0-360	X
9	0.1273	68.77	Pk	11.4	0	80.17	105.5	-25.33	0-360	Y
10	0.38366	48.24	Pk	11.3	0	59.54	95.92	-36.38	0-360	Y
11	0.63969	40.64	Pk	11.4	0	52.04	71.48	-19.44	0-360	Y
12	0.89848	34.62	Pk	11.4	0.1	46.12	68.53	-22.41	0-360	Y
13	1.13775	30.96	Pk	11.4	0.1	42.46	66.48	-24.02	0-360	Y
14	1.39875	26.01	Pk	11.4	0.1	37.51	64.69	-27.18	0-360	Y
15	1.6525	25.45	Pk	11.5	0.1	37.05	63.24	-26.19	0-360	Y
16	1.90625	22.72	Pk	11.5	0.1	34.32	69.54	-35.22	0-360	Y
17	0.13234	66.72	Pk	11.4	0	78.12	105.16	-27.04	0-360	Z
18	0.39474	47.5	Pk	11.3	0	58.8	95.68	-36.88	0-360	Z
19	0.65801	40.64	Pk	11.4	0	52.04	71.24	-19.2	0-360	Z
20	0.92213	34.65	Pk	11.4	0.1	46.15	68.31	-22.16	0-360	Z
21	1.174	28.94	Pk	11.4	0.1	40.44	66.21	-25.77	0-360	Z
22	1.435	26.04	Pk	11.4	0.1	37.54	64.47	-26.93	0-360	Z
23	1.696	24.68	Pk	11.5	0.1	36.28	63.02	-26.74	0-360	Z
24	2.21075	23.49	Pk	11.5	0.1	35.09	69.54	-34.45	0-360	Z
25	28.94875	23.9	Pk	8.1	0.3	32.3	69.54	-37.24	0-360	Z
Pk - Peak detector										

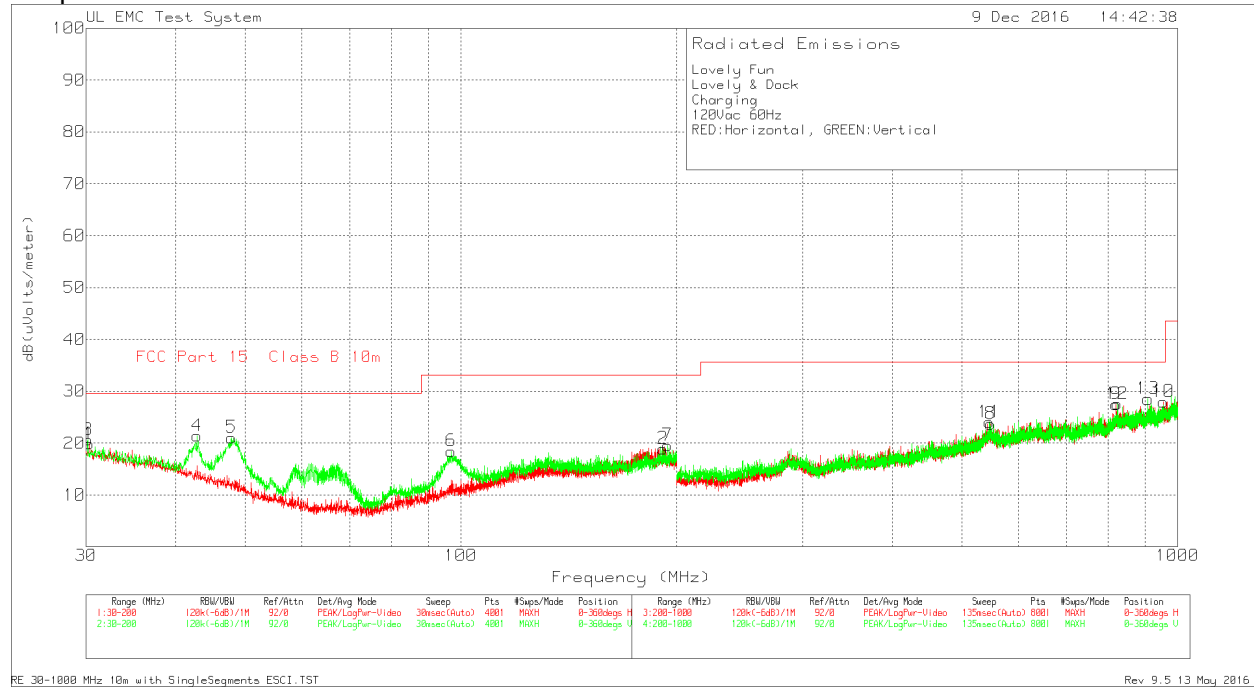
RESTRICTED BANDEDGE EMISSIONS

Bandedge measurements were conducted using radiated field strength and 20dBc points. Attempt was made to move the device up and down and around the charging pad. This caused the impedance of the load to change and maximum range of frequencies was used. Special Attention was paid to 110kHz.



TX SPURIOUS EMISSIONS 30MHz TO 1GHz Charging Mode

Graph



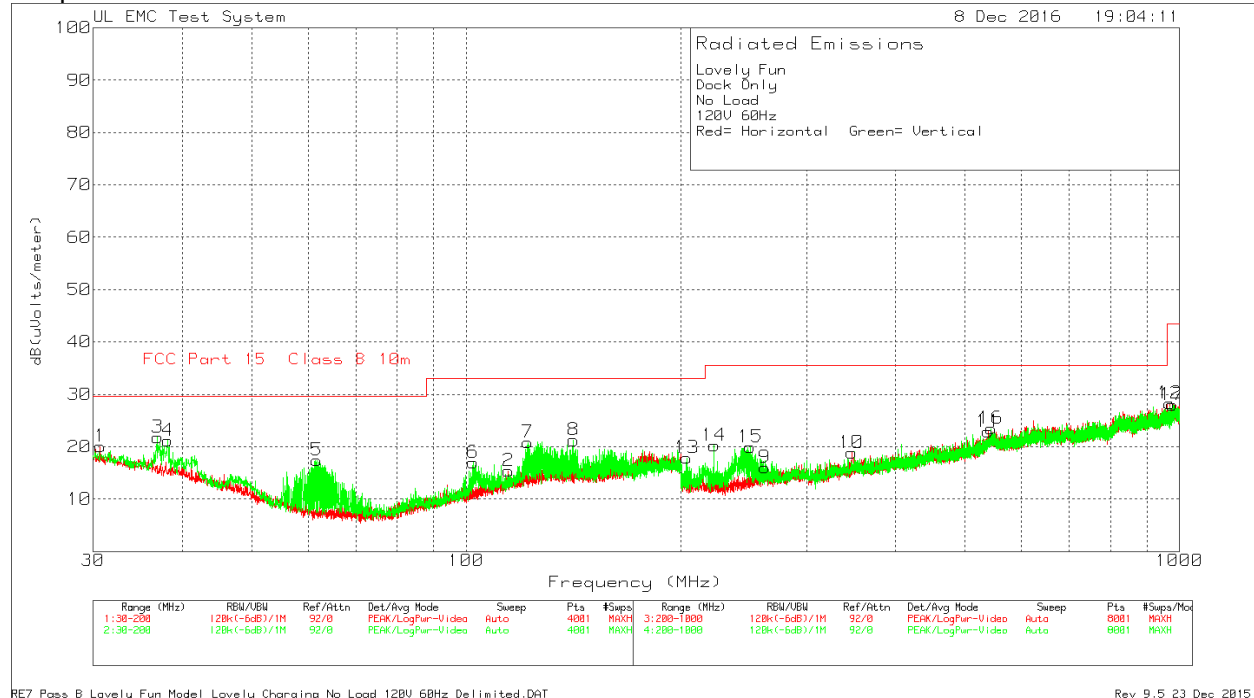
Data

Lovely Fun											
Lovely & Dock											
Charging											
120Vac 60Hz											
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Antenna Factor dBm	Path dB	Corrected Reading dB(uVolts /meter)	QP Limit dBuV/m	QP Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity	
1	30.2975	31.77 Pk	18.1	-30	19.87	29.55	-9.68	0-360	101	H	
2	191.5425	31.84 Pk	16	-28.9	18.94	33.07	-14.13	0-360	101	H	
3	30.17	32.56 Pk	18.1	-30	20.66	29.55	-8.89	0-360	398	V	
4	42.835	38.09 Pk	13.3	-30	21.39	29.55	-8.16	0-360	101	V	
5	47.8925	39.89 Pk	11.2	-30	21.09	29.55	-8.46	0-360	101	V	
6	96.9375	37.96 Pk	10.3	-29.8	18.46	33.07	-14.61	0-360	101	V	
7	194.3475	32.38 Pk	16	-28.8	19.58	33.07	-13.49	0-360	101	V	
8	547.6	31.32 Pk	20	-27.6	23.72	35.57	-11.85	0-360	399	H	
9	820.1	32.41 Pk	22.8	-27.7	27.51	35.57	-8.06	0-360	199	H	
10	954.5	31.68 Pk	23.5	-27.2	27.98	35.57	-7.59	0-360	199	H	
11	546.2	31.56 Pk	20.1	-27.6	24.06	35.57	-11.51	0-360	302	V	
12	823.6	32.57 Pk	22.7	-27.7	27.57	35.57	-8	0-360	399	V	
13	909.1	33.02 Pk	23.1	-27.6	28.52	35.57	-7.05	0-360	99	V	
Pk - Peak detector											

7.3. LOAD REMOVED\ DIGITAL RADIATED EMISSIONS

Charging Dock Standby Mode

Graph



Data

Lovely Fun											
Model: Lovely											
No Load											
120V 60Hz											
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dBm	Path dB	Corrected Reading dB(uVolts/meter)	QP Limit dBuV/m	QP Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	30.68	32.13	Pk	17.9	-30	20.03	29.55	-9.52	0-360	101	H
2	114.575	32.38	Pk	12.8	-29.8	15.38	33.07	-17.69	0-360	101	H
3	36.9275	36.21	Pk	15.5	-29.9	21.81	29.55	-7.74	0-360	101	V
4	38.16	36.19	Pk	15	-30	21.19	29.55	-8.36	0-360	101	V
5	61.705	40.48	Pk	6.8	-29.9	17.38	29.55	-12.17	0-360	251	V
6	102.2075	35.78	Pk	11	-29.8	16.98	33.07	-16.09	0-360	101	V
7	122.0125	37.01	Pk	13.5	-29.7	20.81	33.07	-12.26	0-360	101	V
8	141.35	36.73	Pk	14.1	-29.6	21.23	33.07	-11.84	0-360	101	V
9	262.2	32.52	Pk	12.6	-29.1	16.02	35.57	-19.55	0-360	399	H
10	346.9	32.46	Pk	15	-28.6	18.86	35.57	-16.71	0-360	98	H
11	539.5	31.01	Pk	19.6	-27.7	22.91	35.57	-12.66	0-360	299	H
12	968.6	31.85	Pk	23.4	-27	28.25	43.52	-15.27	0-360	399	H
13	203.8	35.93	Pk	11.3	-29.4	17.83	33.07	-15.24	0-360	99	V
14	222.6	38.46	Pk	11.1	-29.3	20.26	35.57	-15.31	0-360	99	V
15	250.3	37.04	Pk	12.1	-29.2	19.94	35.57	-15.63	0-360	198	V
16	544.2	31.05	Pk	20	-27.6	23.45	35.57	-12.12	0-360	302	V
17	977.4	31.39	Pk	23.7	-27.1	27.99	43.52	-15.53	0-360	399	V

Pk - Peak detector

* no emissions within 6dB from the limit, measurements not needed.

8. AC MAINS LINE CONDUCTED EMISSIONS

LIMITS

§15.207 (a)

Frequency of emission (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50
* Decreases with the logarithm of the frequency.		

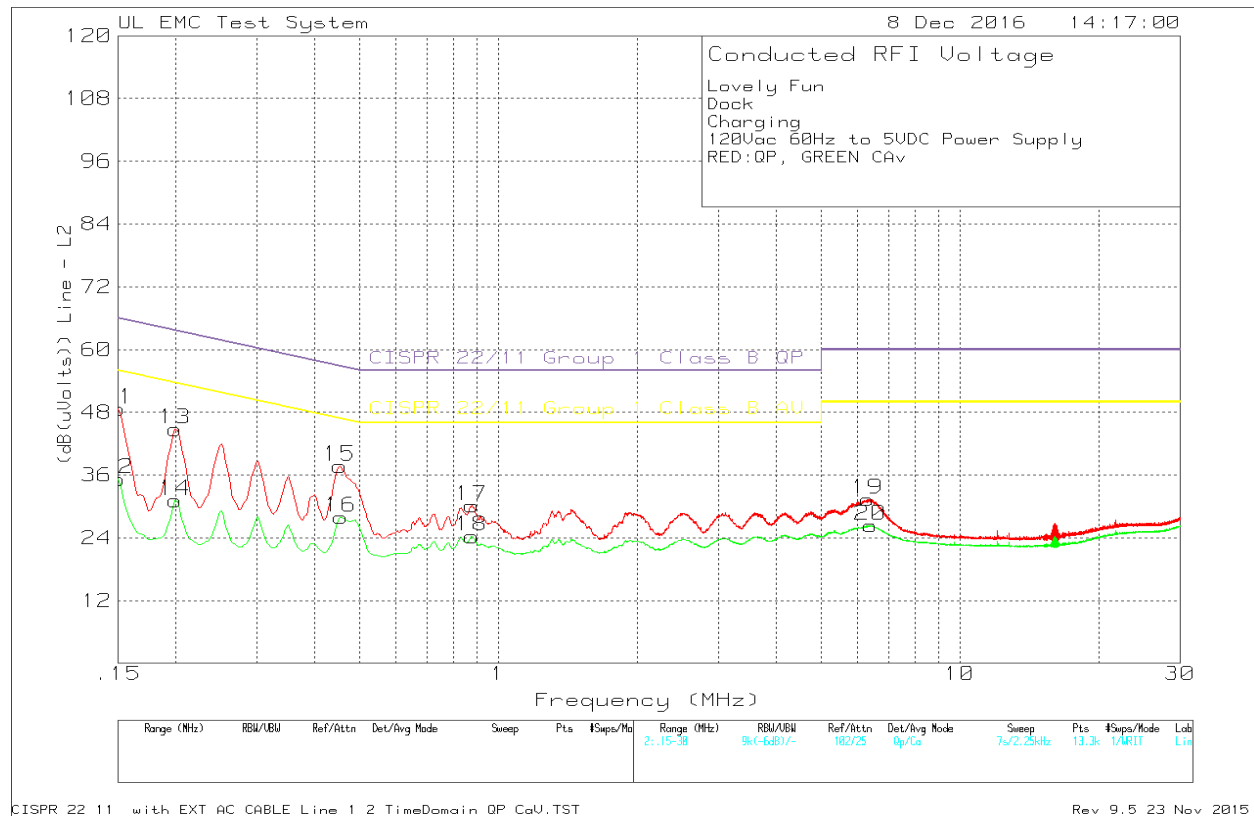
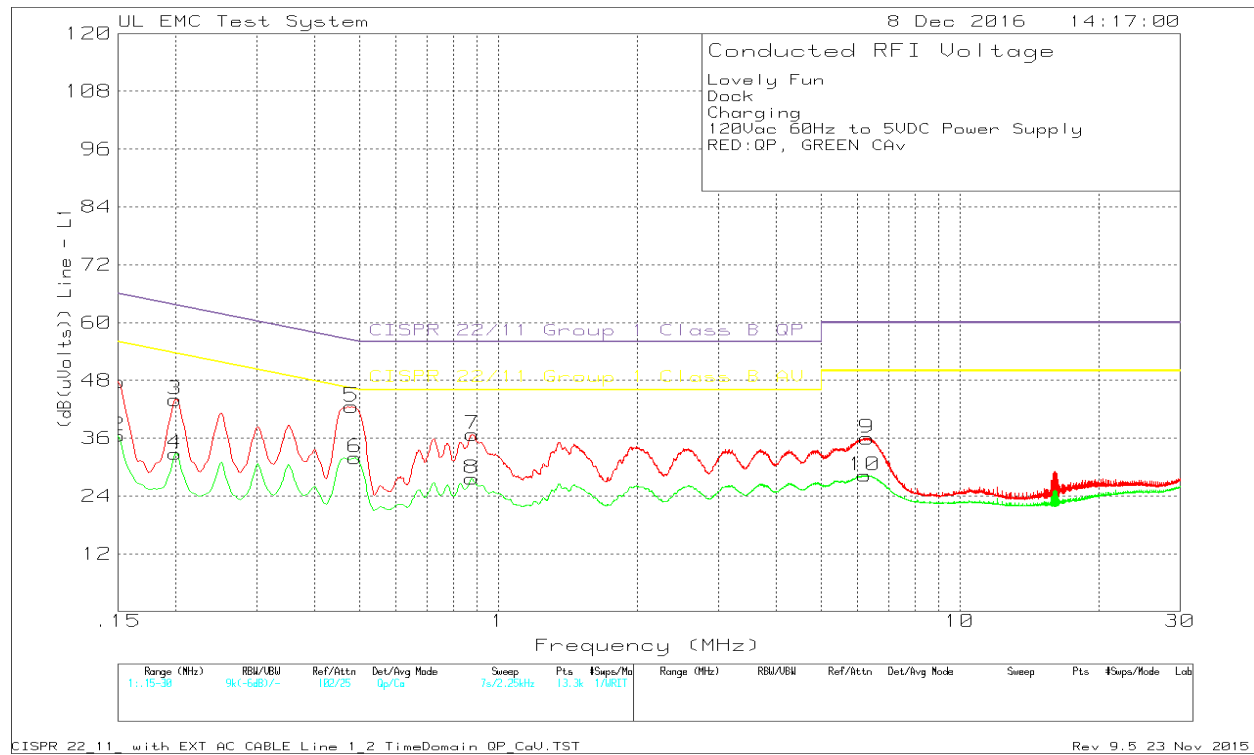
TEST PROCEDURE

ANSI C63.10

RESULTS

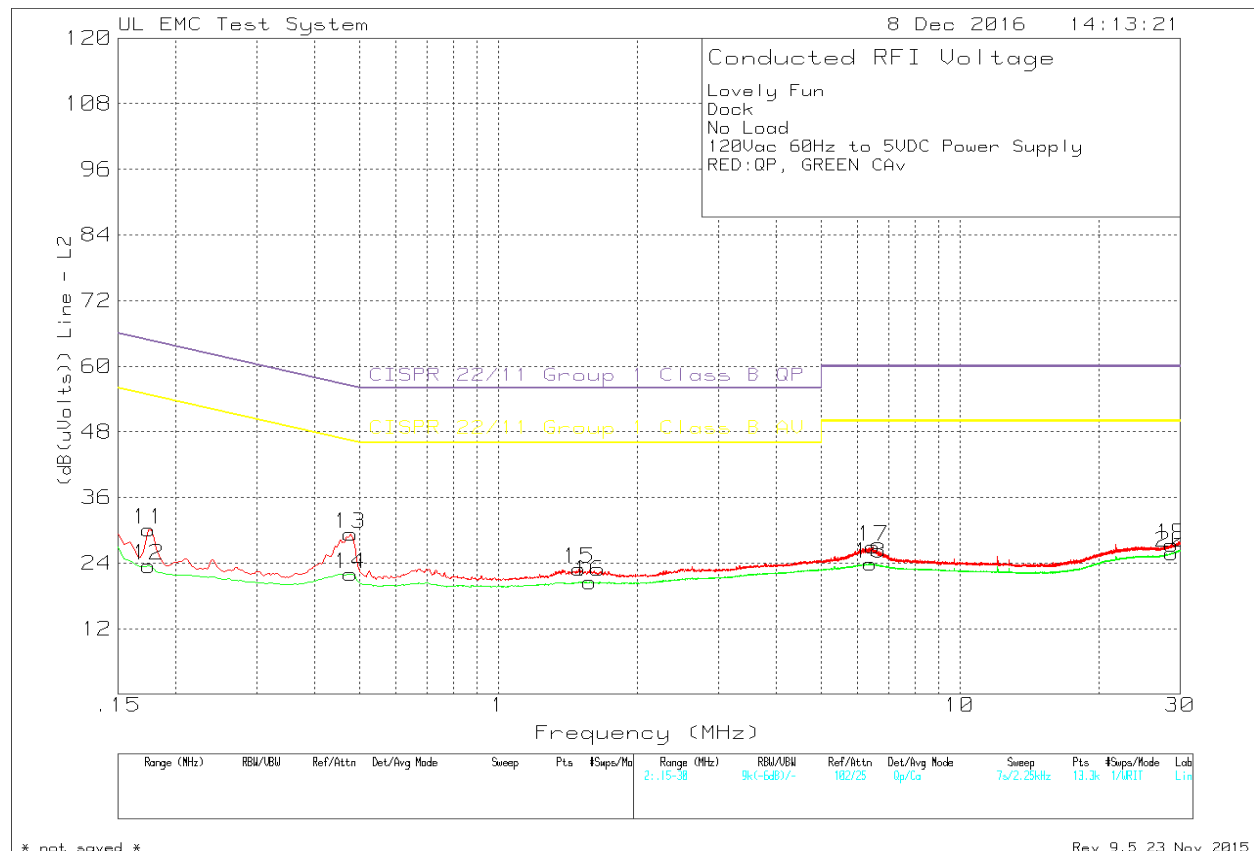
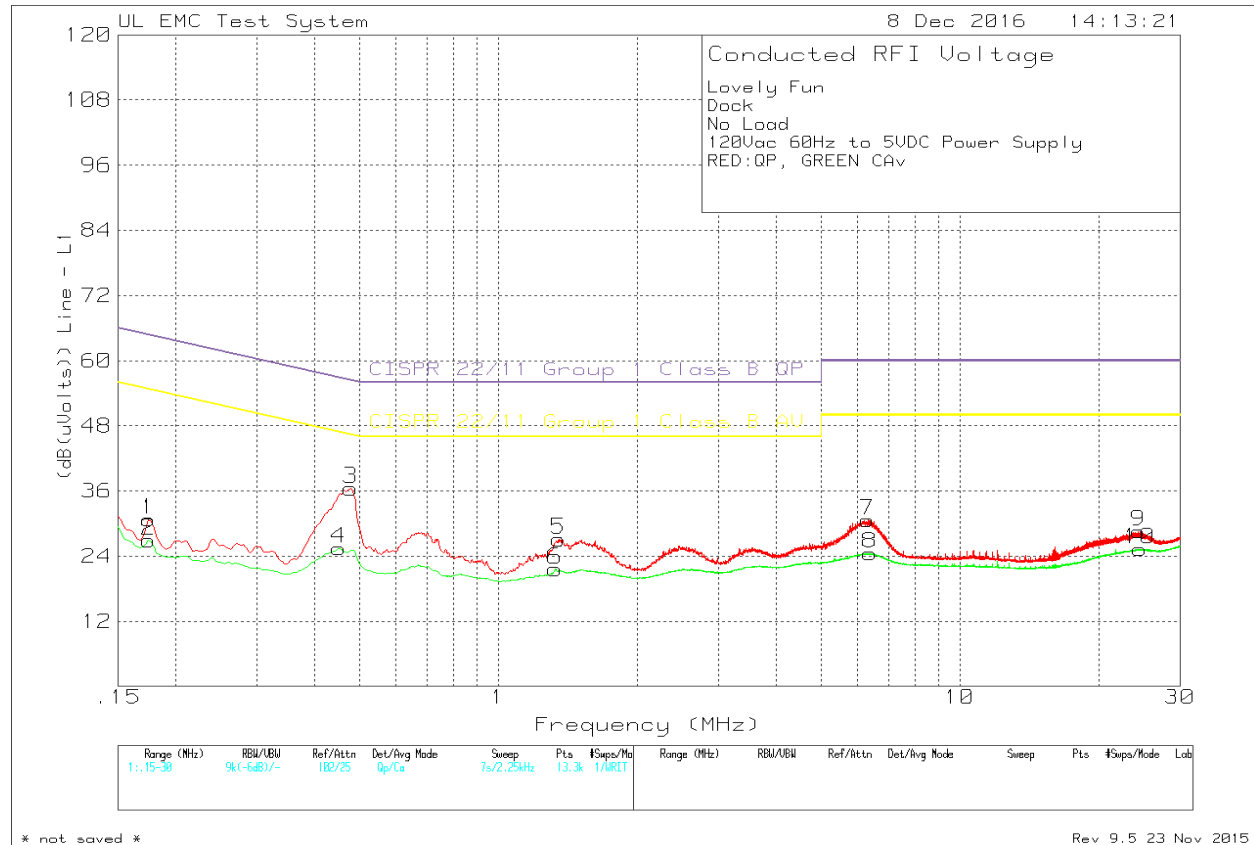
No non-compliance noted:

Line Conducted Emissions – Charging Mode



Lovely Fun										
Dock										
Charging										
120Vac 60Hz to 5VDC Power Supply										
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	LISN Factor dB	Path dB	Corrected Reading (dB(uVolts))	QP Limit dBuV	QP Margin (dB)	AV Limit dBuV	AV Margin (dB)
Line L1										
1	0.15	33.05	Qp	0.1	14.6	47.75	66	-18.25	-	-
2	0.15	21.83	Ca	0.1	14.6	36.53	-	-	56	-19.47
3	0.1995	32.5	Qp	0	11.5	44	63.63	-19.63	-	-
4	0.1995	21.3	Ca	0	11.5	32.8	-	-	53.63	-20.83
5	0.48075	31.85	Qp	0	10.7	42.55	56.33	-13.78	-	-
6	0.48975	21.25	Ca	0	10.7	31.95	-	-	46.17	-14.22
7	0.879	26.19	Qp	0	10.6	36.79	56	-19.21	-	-
8	0.87675	17.04	Ca	0	10.6	27.64	-	-	46	-18.36
9	6.2925	25.1	Qp	0	10.9	36	60	-24	-	-
10	6.225	17.36	Ca	0	10.9	28.26	-	-	50	-21.74
Line L2										
11	0.15	33.32	Qp	0.1	15.2	48.62	66	-17.38	-	-
12	0.15	19.93	Ca	0.1	15.2	35.23	-	-	56	-20.77
13	0.1995	32.66	Qp	0.1	12	44.76	63.63	-18.87	-	-
14	0.1995	19.05	Ca	0.1	12	31.15	-	-	53.63	-22.48
15	0.45375	26.51	Qp	0	11.2	37.71	56.81	-19.1	-	-
16	0.456	16.77	Ca	0	11.2	27.97	-	-	46.77	-18.8
17	0.87675	19.07	Qp	0	11.1	30.17	56	-25.83	-	-
18	0.87675	13.22	Ca	0	11.1	24.32	-	-	46	-21.68
19	6.3105	19.87	Qp	0	11.5	31.37	60	-28.63	-	-
20	6.4095	14.86	Ca	0	11.5	26.36	-	-	50	-23.64
Qp - Quasi-Peak detector										
Ca - CISPR Average detection										

Line Conducted Emissions – Standby Mode



Lovely Fun										
Dock										
No Load										
120Vac 60Hz to 5VDC Power Supply										
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	LISN Factor dB	Path dB	Corrected Reading (dB(uVolts))	QP Limit dBuV	QP Margin (dB)	AV Limit dBuV	Margin (dB)
Line L1										
1	0.17475	18.74	Qp	0.1	11.9	30.74	64.73	-33.99	-	-
2	0.17475	14.9	Ca	0.1	11.9	26.9	-	-	54.73	-27.83
3	0.4785	25.74	Qp	0	10.7	36.44	56.37	-19.93	-	-
4	0.4515	14.75	Ca	0	10.7	25.45	-	-	46.85	-21.4
5	1.3515	16.47	Qp	0	10.6	27.07	56	-28.93	-	-
6	1.329	11.01	Ca	0	10.6	21.61	-	-	46	-24.39
7	6.315	19.74	Qp	0	10.9	30.64	60	-29.36	-	-
8	6.3825	13.6	Ca	0	10.9	24.5	-	-	50	-25.5
9	24.36675	15.97	Qp	-0.1	12.7	28.57	60	-31.43	-	-
10	24.53775	12.48	Ca	-0.1	12.9	25.28	-	-	50	-24.72
Line L2										
11	0.17475	17.62	Qp	0.1	12.4	30.12	64.73	-34.61	-	-
12	0.17475	11.01	Ca	0.1	12.4	23.51	-	-	54.73	-31.22
13	0.4785	18.13	Qp	0	11.2	29.33	56.37	-27.04	-	-
14	0.4785	10.8	Ca	0	11.2	22	-	-	46.37	-24.37
15	1.49775	11.85	Qp	0	11.1	22.95	56	-33.05	-	-
16	1.57875	9.45	Ca	0	11.1	20.55	-	-	46	-25.45
17	6.486	15.51	Qp	0	11.5	27.01	60	-32.99	-	-
18	6.4005	12.38	Ca	0	11.5	23.88	-	-	50	-26.12
19	28.779	13.86	Qp	-0.1	13.6	27.36	60	-32.64	-	-
20	28.779	12.36	Ca	-0.1	13.6	25.86	-	-	50	-24.14
Qp - Quasi-Peak detector										
Ca - CISPR Average detection										